

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of
Fredrik GUNNARSSON et al
Serial No. 10/594,122
Filed: September 25, 2006

Atty. Ref.: 4147-187
TC/A.U.: 2617
Examiner: Kathy W. WANG-
Confirmation HURST
No.: 7362

For: METHODS OF AND APPARATUSES FOR CELL-DIFFERENTIATED
HANDOVER IN A MOBILE COMMUNICATIONS SYSTEMS

May 13, 2009

MAIL STOP AF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Sir:

Applicants request pre-appeal review of the final rejections in the above-identified Application. This request is being filed with a Notice of Appeal. The review is requested for the reason(s) stated below.

SUBJECT MATTER OF APPEAL

In the Office Action issued on January 13, 2009, the Examiner rejects claims 38-66 under 35 U.S.C. 103(a) as being unpatentable over Barnett et al, (U.S. Patent No. 5,428,816) in view of Brody et al. (US 4,670,899). In a separately submitted Amendment After-Final on the same date herewith, claims 38 and 49-51 are canceled, claim 39 is amended to address a clerical issue and claims 47, 48 and 54 are amended to correct dependencies necessitated by the cancellation of claims 38 and 49-51. Claims 39-48 and 52-66 are now pending and stand rejected as being unpatentable over Barnett and Brody.

Regarding independent claim 39, the Examiner alleges that Barnett discloses all steps of a method of triggering a handover-related procedure for user equipment in a cellular communications system including the step of:

transmitting said handover triggering command to said user equipment, said handover triggering command allowing said user equipment to perform said handover-related procedure involving said cell, wherein a handover signal strength

threshold associated to a first handover-related class of said multiple handover-related classes being different from a handover signal strength threshold associated to a second handover-related class of said multiple handover-related classes.

Barnett does not explicitly disclose the transmission of a handover triggering command to the user equipment. In a clear contrast, Barnett merely states that a handover is made once certain criteria are met (column 9, lines 55-56).

More importantly, Barnett does not disclose that the handover signal strength threshold associated with a first handover-related class is different from the handover signal strength threshold associated with a second handover-related class.

In clear contrast, Barnett discloses a single threshold that is used for determining whether to trigger a handover procedure and thereby transfer the mobile unit from the currently serving cell to the neighboring cell. This is clearly emphasized on column 5, lines 6-8 disclosing a **fixed** cell selection threshold at which the mobile unit is transferred from the serving cell to the neighboring cell. This fixed threshold is common to all cells of the communications system and is denoted RSSI-THP in Barnett (column 6, lines 28-30).

The Examiner refers to column 7, lines 3-13 and column 8, lines 11-33 in Barnett as relating to class-specific handover signal strength thresholds. However, column 7, lines 3-13 merely state how cells belonging to different classes should be handled with regard to a measurement list. As is well known in the art, such measurement list includes information of those cells that are adjacent to a currently serving cell and that there could be potential candidates for the purpose of a handover in the case the signal strength of the serving cell drops to unacceptable levels.

The above-mentioned relied-upon portion of Barnett merely states that class I neighboring cells are included directly in the neighboring cell as soon as the traffic channel of the serving cell becomes activated. Class II neighboring cells are only included in the measuring list if the signal strength of the serving cell's traffic channel drops below the above-mentioned first threshold. Class III neighboring cells are included in the measurement list when the signal strength of the serving cell's traffic channel drops too much, i.e. below a critical threshold.

Thus, this section of Barnett discloses that fixed thresholds RSSI-MSR and RSSI-C (column 7, lines 3-6), which are common for the whole communications system, are compared to measured signal strengths of the serving cell's traffic channel for the purpose of deciding whether to enter the cells on the measurement list. However, the relevant signal strength used in these measurements is between mobile unit and the currently serving cell (column 7, lines 5-12) and not between the mobile unit and a neighboring candidate serving cell.

There is consequently no disclosure of usage of class-specific handover signal strength thresholds that are employed for the purpose of triggering

handover. Barnett further does not disclose any comparison of a measured signal quality for a communications link between the mobile unit and a base station of a cell with an assigned handover signal strength threshold associated with the handover-related class of **that particular** cell.

Additionally, the fixed, common thresholds mentioned in this section are used for entering cells on the measurement list; the thresholds are not used for generating any handover triggering command. These RSSI-MSR and RSSI-C thresholds are thus fundamentally different from the RSSI-THP threshold that is the one used for determining whether to trigger a handover command.

Column 8, lines 11-33 merely repeats the disclosure of column 7, lines 3-13 and confirms that class I cells are immediately included in the measurement list, class II cells are included in the list if the signal strength of the serving cell's traffic channel is below the handoff measurement threshold and class III cells are entered on the list only if the signal strength of the serving cell's traffic channel is below the critical threshold.

This section of Barnett thus confirms the previous disclosure and does not at all mention or disclose any assignment of handover signal strength thresholds to cells based on the handover-related class determined for the cells.

The division of cells into classes and the class-specific handling of cells in connection with the measurement list are used by Barrett since the standard stipulates at most twelve cells can be entered on the measurement list (column 1, lines 39-45). Thus in Barnett, it is important, if there are more than twelve potential adjacent candidate serving cells, that the most important candidate serving cells, i.e. class I cells, are present on the list and that less preferred cells, i.e. class III cells, should only be entered on the list under critical "emergency" situations if no higher class cells are available or if such higher class cells are not suitable as candidate serving cells.

This, however, is totally irrelevant to the usage of different handover signal strength thresholds for cells of different handover-related classes for the purpose of triggering handovers and generating handover triggering commands. Instead Barnett only relates, in this context, to the order at which cells should be entered on the measurement list.

The Examiner cites a combination of Barnett and Brody against claim 39. Brody discloses that all the cells in the cellular communication system are assigned one and the same handover threshold (column 18, lines 33-37). Each cell then has respective hysteresis value that is used in the comparison between measured signal strength and the handover threshold (column 18, 42-45). This hysteresis value is used in order to prevent a switch back and forth in the assignment of serving cell due to small fluctuations in the measured signal strength.

Brody does not at all disclose or even mentions any classification of cells. Brody further does not disclose any class-specific handover thresholds and in particular does not disclose assigning a first such threshold to a first handover-

related class and assigning a second, different threshold to a second handover--related class.

In the Office action the Examiner refers to column 24, lines 6-28 mentioning coverage area. However, that section merely discloses the different variable simulation parameters used for conducting a computer-aided simulation of the invention disclosed by Brody.

Thus, Barnett and Brody, even if assumed to be combinable, would merely guide one of ordinary skill towards using one and the same handover signal strength threshold for all the cells in the cellular communication system as both Barnett and Brody only discloses fixed threshold that is used system-wide for all cells.

Barnett and Brody taken either individually or as a combination guides the one of ordinary skill in a fundamentally different direction by consistently stating that the same signal handover signal strength threshold is used for different cells even if they belong to different classes. For at least the reasons stated above, claim 39 and the dependent claims thereon are patentable over Barnett in view of Brody. Similar discussion applies mutatis mutandis to independent system claim 52. Consequently, claim 52 and the dependent claims thereon are patentable over Barnett in view of Brody.

Regarding independent claim 40, the Examiner alleges that Barnett discloses all steps of a method for modifying a list of connected cells for user equipment in a cellular communications system as recited including the step of:

receiving a handover signal strength threshold for said cell, said handover signal strength threshold being determined based on the radio coverage characteristics of said cell.

Barnett does not disclose that the handover signal strength threshold is determined based on the radio coverage characteristics of the cell. In clear contrast, Barnett states that the thresholds should be fixed for all the cells in the communication system (column 5, lines 3-8). Also Brody discloses the usage of a single hand-off threshold for all the cells (column 18, lines 33-34).

Thus, even if it is assumed that Barnett and Brody can be combined, one of ordinary skill would not be guided towards the solution to determine signal strength thresholds based on the radio coverage characteristics of the cells as recited. Instead, one of ordinary skill would use a fixed threshold or a set of fixed thresholds regardless of varying radio coverage characteristics for the cells. There is consequently no guidance in the combination of Barnett and Brody towards using handover signal strength thresholds that are determined class-specific based on the radio coverage characteristics of the cells.

The combination of Barnett and Brody, again assuming they are combinable, in clear contrast guides one of ordinary skill in a fundamentally different direction by using fixed thresholds for the cells and that these thresholds are not dependent on any radio coverage characteristics. Consequently, claim 40 and the dependent claims thereon are patentable over the Barnett in view of

Brody. Similar discussion applies mutatis mutandis to independent unit claim 55 and to independent user equipment claim 62. Therefore, claims 55 and the dependent claims thereon as well as claim 62 and the dependent claims thereon are patentable over Barnett in view of Brody.

While addressing primarily the independent claims, Applicants note that various dependent claims have separate patentable merit.

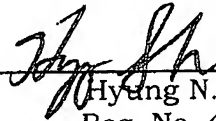
CONCLUSION

As shown by the above analysis of the references, no reference alone or in combination with any other reference(s) renders the present claims unpatentable. There is no disclosure of the claimed subject matter, nor is the claimed subject matter rendered obvious. The rejections should be withdrawn. For reasons including those set forth above, upon pre-appeal review it is respectfully requested that the prior art rejections be withdrawn and the pending claims allowed.

Respectfully submitted,

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By: _____



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